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00 04 58 35 CMP Boy, it's really hard to describe what this earth looks like. I'm looking out my center window, which is a round window, and the window is bigger than the earth is right now. I can clearly see the terminator. I can see most of South America, all the way up to Central America, Yucatan, and the peninsula of Florida. There is a big swirling motion just off the east coast, and then going on over toward the east, I can still see West Africa, which has a few clouds right now. We can see all the way down to Cape Horn in South America.

00 04 59 21 CC Good grief, that must be quite a view.

00 04 59 24 CDR Yes. Tell the people in Tierra Del Fuego to put on their raincoats; looks like a storm is out there.

00 04 59 31 CC Roger. Will do. Do you care to give them a 24-hour forecast?

00 04 59 41 CDR Probably as good as any other.

00 05 05 13 CDR Houston, Apollo 8.

00 05 05 17 CC Apollo 8, Houston. Go ahead.

00 05 05 22 CDR Roger. You might be interested to know the center window is pretty well fogged up, but the other four seem to be in pretty good shape.

00 05 05 29 CC Glad to hear you've got four out of five, and your big dump will be coming up in 2 minutes or so.

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00 05 05 35 CDR Roger. We're standing by.

00 05 06 48 CDR The S-IVB has started dump.

00 05 07 19 CMP Houston, Apollo 8.

00 05 07 20 CC Go ahead, Apollo 8.

00 05 07 22 CMP Roger. Mike, did you say star 14 was good till
about 05:30 or something?

00 05 07 27 CC Yes. Stand by while I give you that time again.
Star number 14 should be good for about another
8 minutes, Jim - 7 minutes.

00 05 07 41 CMP Okay. Now be advised, the optics calibration
is very difficult to do because of all the other
little stars floating around here. I'm going
to ..., bypass it and do it at the end of this.

00 05 07 59 CC Roger, Apollo 8. Understand.

00 05 08 10 CC You should have the LOX dump now, Apollo 8.

00 05 08 21 CMP Houston, this is 8. I'm looking through the
scanning telescope and that LOX dump and just
blanked out completely the entire scanning tele-
scope.

00 05 08 30 CC Understand.

00 05 08 32 CDR It's a fantastic sight, Bill. Looks like the
S-IVB, a small attitude excursion while it's
dumping.

00 05 08 38 CC Roger. Understand.

00 05 11 31 CC Apollo 8, Houston.

00 05 11 34 CDR Go ahead, Houston. Apollo 8.

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00 05 11 36 CC Roger. I've got a flight plan update for Bill if he's ready to copy.

00 05 11 41 CDR Stand by.

00 05 11 42 CMP Stand by.

00 05 11 54 CMP Ready to copy.

00 05 11 55 CC Okay. We are about 05:10 GET where we will record the BLOCK data TLI plus four and TLI plus 11. The TLI plus four PAD that we gave you before is perfectly all right. We will not require that one, and we will have the TLI plus 11 hour PAD for you shortly, then at 05:45 or 6 hours on that high-gain antenna checkout. Roger. Standing by.

00 05 12 28 CDR We are on OMNI D, and we heard - we lost you after - TLI plus four was okay.

00 05 12 32 CC Okay. The TLI plus 4 hour PAD is okay. We will have the TLI plus 11 hour PAD for you shortly, and at 05:50, for your high-gain antenna checkout, we would like you to leave that switch in WIDE BEAM with reference to our conversation the other day; leave it in WIDE.

00 05 12 52 CDR Roger. Don't want to zap your receivers.

00 05 12 55 CC No, it has to do with some loss of tracking data, so it is better to leave it WIDE.

00 05 13 00 CDR Okay.

00 05 16 41 CMP Houston, Apollo 8. Are you recording what we are getting out of 23?

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00 05 16 44 CC Stand by one, Jim; I'll check.

00 05 17 27 CC That is affirmative, Jim; we are copying your P23.

00 05 17 32 CMP Pretty big numbers there.

00 05 17 34 CC Well, we think that is because you bypassed the trunnion check.

00 05 17 40 CMP Roger.

00 05 22 18 CMP Houston, we are getting some really big numbers in DELTA-R and DELTA-V.

00 05 22 23 CC Roger. Understand, Jim.

00 05 22 25 CMP Do you want us to proceed with this, or should we just leave them alone?

00 05 22 32 CC Apollo 8, say again.

00 05 22 34 CMP Do you want us to accept these, or should we leave them alone?

00 05 22 37 CC Stand by.

00 05 23 46 CC Apollo 8, Houston.

00 05 23 49 CDR Go ahead, Houston.

00 05 23 50 CC Roger. We do not wish you to accept those marks. This is due to the fact that in bypassing the trunnion bias check, you still have big numbers left in those registers, so you go ahead when - after you do the trunnion bias check. Those numbers will become small later, but do not accept them right now.

00 05 24 11 CDR Understand, Houston.

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00 05 24 13 CC We have a TLI plus 11 hour update for you when
you are ready to copy.

00 05 24 20 CDR Stand by.

00 05 25 00 LMP Roger. Ready to copy TLI plus 11.

00 05 25 04 CC Roger, Bill. TLI plus 11, and this assumes no
midcourse correction number 1: it's an SPS/G&N;
63330 minus 163 plus 129. Are you with me so far?

00 05 25 30 LMP Roger.

00 05 25 32 CC Okay. 013 56 4759 minus 00489 plus 00000 plus
47250 177 144 000, not applicable, plus 00197
47253 554 47050 12 1278 256 023, up 265, left 18.
Are you with me so far?

00 05 27 03 LMP Roger.

00 05 27 05 CC Okay. Plus 1197 minus 16500 12681 35608 050 46
53, GDC align north set stars, roll 068,
pitch 097, yaw 356, ullage none; other: one,
fast return, P37, DELTA-V equals 7900 for
Indian Ocean; number 2, high-speed procedure
not required; number 3, assumes no midcourse
corrections number 1. Over.

00 05 28 38 LMP Roger. TLI plus 11, SPS/G&N 63330 minus 163
plus 129 013 56 4759 minus 00489 plus 0000
plus 47250. You copy so far?

00 05 29 06 CC Yes, I'm with you so far.

00 05 29 11 CC Apollo 8, Houston. Affirmative; I'm with you.

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00 05 29 14 LMP Roll 177 144 00 NA plus 00197 47253 554 47050
12 1278 26, correction 256 023, up 265, left
18. Copy so far?

00 05 29 49 CC Yes, I'm with you so far, Bill; go ahead.

00 05 29 54 LMP Plus 1197, minus 16500 12681 35608 0506, cor-
rection 050 46 53 north set 068 097 356, zero
ullage. Note one: fast return, P37, DELTA-V
7900 Indian Ocean; two, high-speed procedure
not required; three, PAD assumes no MCC 1.
Over.

00 05 30 42 CC That's all correct, Bill.

00 05 30 49 LMP Roger.

00 05 31 08 CMP Houston, Apollo 8.

00 05 31 10 CC Go ahead, Apollo 8.

00 05 31 13 CMP Roger, Mike. I'd like to give some comments
on P23 data. The auto maneuver was quite
accurate. Looks like we got some substellar
point in the maneuver; auto optics put Canopus
straight where it should be; minimum impulse
control worked as advertised. At the altitudes
at which I started to do the sightings, they
have a definite hazy band line. The filter
gives the earth a glow, sort of an orangey
glow. It's very indefinite of where to put the
star, but there does seem to be a solid line
where you might expect the horizon to be that

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appears through the haze where we expect the atmosphere to be. I followed the procedure which we had done up at MIT, about two lines atop the haze layer a definite line for these sightings. In regards to the optics calibration, it was very difficult to find a star in the landmark line of sight in the venting of the S-IVB.

00 05 32 33 CC Roger, Apollo 8. We copied that, and we'd like for you to do that trunnion check, that calibration, prior to your next set of sightings.

00 05 32 44 CMP Roger. Will do. Canopus just disappeared from view, and maybe when we get a little time here, I'll try to get a calibration the first time.

00 05 32 56 CC Roger. Understand.

00 05 33 00 LMP And, Houston, we've rewound the tape; you can dump it at your convenience.

00 05 33 07 CC Roger, Bill. Thank you. Are you still picking up anything on the VHF?

00 05 33 15 LMP Are you playing anything?

00 05 33 17 CC Affirmative.

00 05 33 41 LMP No, I'm not picking anything up.

00 05 33 43 CC Roger. Thank you.

00 05 33 44 LMP What's our altitude now?

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00 05 33 50 CC Well, you're about 22 000 miles.

00 05 33 55 LMP Okay.

00 05 33 56 CC Give or take a thousand feet.

00 05 33 59 LMP I'll go ahead and turn VHF-A off and high gain.

00 05 34 03 CC Roger, Bill. Thank you.

00 05 34 06 LMP It was some pretty nice music while it lasted.

00 05 34 09 CC Yes, I bet so.

00 05 35 01 CC Apollo 8, Houston.

00 05 35 04 CMP Go ahead, Houston.

00 05 35 07 CC We're going to have to wait until we get the
high-gain antenna locked on again to dump the
tape.

00 05 35 15 CDR Okay. And you are about ready for us to go to
the PTC attitude?

00 05 35 23 CC Stand by one.

00 05 35 26 CDR Okay.

00 05 35 57 CC Apollo 8, Houston.

00 05 36 00 CDR Go ahead.

00 05 36 01 CC We'd like to hold off on the PTC and get some
more P23 information. We'll have some more
details of that for you shortly.

00 05 36 09 CDR Alright.

00 05 36 10 CMP Mike, what I'm doing now, I'm going over to
the star Sirius ...

00 05 36 28 CC Apollo 8, Houston. You faded out completely,
Jim. I heard Frank, but it faded when you began
talking. Say again.

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00 05 36 38 CMP Roger. I have switched to Sirius, the second star in the first set, to see if I can't get an optics calibration on it, at least.

00 05 36 49 CC Roger. That's fine. We'll have some more good words for you shortly.

00 05 38 15 CC Apollo 8, Houston.

00 05 38 18 CMP Go ahead.

00 05 38 19 CC Jim, on your P23, we'd like to go ahead and do the calibration and then use star number 15 and take three sets, followed by star number 16, two sets. Over.

00 05 38 38 CMP Roger, Houston. That's what we're trying to do. I'm trying to get 15 for an optics CAL. It's been very difficult with the bright earth to find a star that we can get into the sextant. I'm trying to use the auto optics in P23 to get the star. We have that now; we're trying to maneuver the spacecraft to bring the trunnion to zero so we can get the landmark line of sight.

00 05 39 01 CC Roger. Understand. And I also have your PTC attitude, which is different than you have. I'll give that to you whenever you get a free moment.

00 05 39 16 CDR Ready to copy.

00 05 39 18 CC Alright. PTC attitude will be pitch 242; yaw is 020. Over.

00 05 39 29 LMP Pitch 242, yaw 020. Copy.

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00 05 39 33 CC Very good; thank you.

00 05 50 56 LMP Houston, Apollo 8. Over.

00 05 51 00 CC Apollo 8, Houston. Go ahead.

00 05 51 03 LMP Roger. We'll hold up on the high-gain check until we get out of P23.

00 05 51 07 CC Roger, Bill. Thank you.

00 05 51 15 CC You may have to delay your lunch a little bit. Are you hungry?

00 05 51 19 LMP No.

00 05 51 22 CC First time I ever heard you say that.

00 05 52 11 CC Apollo 8, Houston.

00 05 52 13 CDR Go ahead, Houston. Apollo 8.

00 05 52 14 CC Roger. It looks to us like the S-IVB is behaving completely normally in regard to all the blowdowns and other sequential events that take place. It looks good.

00 05 52 24 CDR Roger. How far away is it from us now?

00 05 52 29 CC We were going to ask you.

00 05 52 31 CDR (Laughter) Okay.

00 05 52 33 CMP Fifty miles.

00 05 52 34 CC Roger. Copy.

00 05 52 41 CDR Let's make that 80 kilometers, since there are some international aspects to this flight.

00 05 52 49 CC Roger.

00 05 53 52 CMP Okay, Houston. We did an optics calibration; we get zeros all the time.

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00 05 53 58 CC Roger. Understand; optics calibration and zeros all the time. Good.

00 05 54 03 CMP It takes a lot longer to do it, though. I had to go to a star like Sirius to finally see it.

00 05 54 09 CC Roger. Understand. We are real glad you got that so we can get a horizon calibration to put in the computer.

00 05 54 55 CDR Looks like the number 5 window is starting to fog up, Houston.

00 05 55 01 CC Roger, Houston. Understand it's the number 5 that is fogging up.

00 05 55 48 CMP Houston, P23 coming through with Sirius.

00 05 55 53 CC Roger. Thank you.

00 05 55 54 CMP A little better, these numbers are a little better.

00 05 55 57 CC We would expect so.

00 06 07 16 CDR Houston, how do you read? Apollo 8.

00 06 07 18 CC Apollo 8, Houston. Go ahead.

00 06 07 21 CDR Roger. Have you been getting the downlink on the P23?

00 06 07 25 CC That is affirmative.

00 06 07 28 CDR Okay. Now how much longer do you want us to hold off going to PTC?

00 06 07 33 CC Stand by one, Frank.

00 06 13 16 CMP Houston, Apollo 8.

00 06 13 18 CC Apollo 8, Houston.

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00 06 13 24 CC Apollo 8, this is Houston. Over.

00 06 13 26 CMP Roger. Are you recording all of the data from 23, or do you want some read down to you?

00 06 13 37 CC Stand by, Jim. We think we are getting it all. We are confirming now. That is affirmative, Jim. We are getting all that is coming down. How is it going?

00 06 13 47 CMP It's working very nicely. I finished - one set was Sirius, three stars, and one set with Procyon, or two sightings; three sightings with Sirius and two with Procyon.

00 06 14 03 CDR Okay, Houston. This is Apollo 8. We are ready to go to the PTC attitude.

00 06 14 10 CC Roger, Frank. Understand. And we understand you've completed all sets, three on one and two on another in P23. Is that right?

00 06 14 18 CDR That's affirmative. But we've finished the five sightings, three on 15 and two on 16.

00 06 16 18 CC Apollo 8, Houston.

00 06 16 20 CDR Go ahead, Houston. Apollo 8.

00 06 16 22 CC Roger, Frank. What we are doing down here is this. We'd really like the horizon calibration. We would like a total of 15 marks; you know, three sets on one star, two on the other. On the other hand, we are balancing that with the need to go to PTC, and we are not losing sight

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of the fact that you want to go to PTC right away. So if you will bear with us another couple of minutes, we are trying to decide whether to ask you to go back and do some more of P23 or whether to clear you at this time to go to PTC. Over.

00 06 16 50 CDR Okay. We started maneuvering to PTC. We are getting kind of far behind, and what I am concerned about, Mike, Jim is now taking off his pressure suit.

00 06 17 00 CC Roger. Understand. How about you and Bill?

00 06 17 03 CDR Well, we are standing by till he gets through.

00 06 17 04 CC Understand. And you are maneuvering to PTC. That's fine.

00 06 17 09 CDR Well, I would prefer to do that, but we will --

00 06 17 14 CC Okay. Stand by just one.

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00 06 22 12 CC Apollo 8, Houston.

00 06 22 14 CDR Go ahead, Houston. Apollo 8.

00 06 22 17 CC Roger. We would like to hold off on the passive thermal control until 7 hours GET and, in the meantime, to get as many more P23 marks as we can, starting with the first star and doing two sets of three marks each, and then going to the second star we gave you. And concurrent with that, if possible, we would like Bill to run this high-gain antenna check-out if Lovell's attitude is compatible with that.

00 06 22 49 CDR Okay. But they have not been to date. We are almost to the passive thermal control attitude now, and Jim is just halfway through taking his suit off.

00 06 22 58 CC Roger. Understand.

00 06 23 01 CDR We'll have to hold off for a minute here.

00 06 23 10 CC Roger, Frank. And the reason for this is the horizon calibration requires a number of points to give you good data for the onboard NAV coming on.

00 06 23 21 CDR Roger. We understand. We will be right back with you; just have to wait a minute here.

00 06 23 26 CC Roger. Thank you.

00 06 23 28 CDR That failing to separate from the S-IVB kind of fouled us up a little.

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00 06 23 32 CC Understand.

00 06 27 21 CDR Houston, Apollo 8. How do you read?

00 06 27 24 CC Apollo 8. Go ahead.

00 06 27 27 CDR Roger. We are standing by. Are you about ready for the high-gain antenna trial?

00 06 27 33 CC Okay. Just a second; we will check on that. Then are you in a position where you can go back to the star sightings?

00 06 27 40 CDR Well, we will be, but we can't until Jim gets ready.

00 06 27 44 CC Okay. We will stand, and you give us a mark on that. In just a second, I will check on the antenna. Okay. It looks like we are ready to go on the high-gain antenna check. And we can either go with commands called out from the ground, and you can monitor it, or you can be talked through it, whichever you prefer.

00 06 28 11 CDR Well, stand by. I guess we are not quite in a proper attitude yet.

00 06 28 15 CC Roger.

00 06 28 17 CDR We are slowly getting it.

00 06 32 42 CDR Houston, Apollo 8.

00 06 32 52 CDR Houston, Apollo 8.

00 06 32 56 CC Apollo 8, Houston. Did you call?

00 06 32 59 CDR Roger. There is the high-gain antenna on wide auto.

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00 06 33 04 CC Roger.

00 06 35 21 CDR Houston, Apollo 8.

00 06 35 24 CC Go ahead, Apollo 8.

00 06 35 26 CDR Are you getting the results you want from our high-gain antenna?

00 06 35 44 CC Apollo 8, Houston. Affirmative. We are getting your data, and we may have a beam width change, but stand by on that.

00 06 35 53 CDR Alright. We're standing by. Jim's about ready to go back to the P23.

00 06 35 57 CC Roger. We have a GO until 7 hours on the start of the PTC.

00 06 36 05 CDR Roger. Seven.

00 06 36 54 CDR Houston, Apollo 8.

00 06 36 57 CC Go ahead, Apollo 8.

00 06 36 59 CDR We're on the PTC mode now waiting for Jim, and I noticed that out my window now I can see Orion very clearly, even though the sun is bright in the other window.

00 06 37 13 CC Roger.

00 06 37 14 CDR It almost pained me to say that, but it's true.

00 06 37 19 CC Roger.

00 06 37 22 CDR Speaking of the windows, the number 5 window is getting pretty well obscured and the number 3 window is unusable.

00 06 37 29 CC Roger. Understand; number 3 is unusable and number 5 is obscured. Can you make out any

definition at all, or do you have a target to look at?

00 06 37 39 CDR Well, I can see the sun. Wait till it comes around the earth, and I'll give you a better hack on that.

00 06 37 42 CC Okay.

00 06 38 14 CC Apollo 8, Houston. We're going to go ahead and try to dump your tape right now. Circuit margins aren't too good at our present configuration. We're going to take a look at it. If it doesn't work, we may have to dump it again at a later configuration.

00 06 38 30 CDR Roger.

00 06 42 57 CDR Houston, Apollo 8. We're maneuvering back now to do another P23.

00 06 43 02 CC Roger. Thank you.

00 06 43 29 CMP Houston, this is Apollo 8. I'll do two more sets on 15, and then we'll do one set on 16.

00 06 43 35 CC Roger. Thank you.

00 06 44 37 CC Apollo 8, Houston.

00 06 44 40 CDR Go ahead, Houston. Apollo 8.

00 06 44 41 CC Okay, Apollo 8. I'd like to fill you in on things we're thinking about doing in the next couple of hours, first chance you get there.

00 06 44 51 CDR Go ahead.

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00 06 44 52 CC

Okay. In relationship to the midcourse correction, we'd like to put that one off until about 11 hours, and it will be approximately a 25-foot-per-second burn. The reason we're delaying the burn time is to allow for better tracking as a result of the 7-1/2-foot per second you put in on the separation. We'd like to take a little more time to look at the tracking data. And the dispersions in your correction aren't going to be growing very fast here. What we'll do then is to delete the NAV sightings that occur about 09 plus 10 in the flight plan, and this will be getting us back on to the normal flight plan sequence. So we'll go ahead and finish the P23, and the 7-hour limit on that P23 is due to the range limits on this test. Over.

00 06 45 46 CMP

Is due to the what did you say?

00 06 45 47 CC

The 7 hours on the P23 problem is due to the fact that we want to get these sightings in at a certain range. Over.

00 06 45 56 CMP

Roger. Understand.

00 06 45 59 CC

If you have any comments on that proposal, why, go ahead and pass them down, and we'll feed them in.

00 06 46 06 CDR

No, I think that's fine. We need to get out of the suits and get something to eat here too.

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00 06 46 11 CC Roger. Looks like we'll be back on the flight plan by 11 hours. We'll be holding up on the updates and PAD's because of the later burn.

00 06 47 35 CMP Houston, Apollo 8.

00 06 47 37 CC Go ahead, Apollo 8.

00 06 47 40 CMP Roger. I believe we have the S-IVB in sight. It would appear to be tumbling, and every once in a while, we are getting very bright reflections from it off the star, off the sun.

00 06 47 51 CC Roger.

00 06 50 00 CMP Houston, 8. Are you getting the data from the P23?

00 06 50 08 CC Stand by one.

00 06 50 12 CC Affirmative, Apollo 8.

00 06 50 13 CDR Okay.

00 07 00 13 CC Apollo 8, Houston.

00 07 00 15 CDR Go ahead, Houston. Apollo 8.

00 07 00 18 CC Roger. We're copying your P23 progress. FAO advises that it looks like you are finishing your first star, and we'll need one more set on the second star, and this 7-hour cut-off isn't that firm, so we would like for you to go ahead and complete the second star if you can.

00 07 00 39 CDR We're on the last setting of the second star right now.

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00 07 00 41 CC Okay. Real fine. And we've got a - it's about time for a cryo fan cycle.

00 07 00 51 CDR Okay. We'll do them one at the time for about 4 minutes on each of them.

00 07 00 59 CC Roger.

00 07 01 50 LMP We've got the cryo fan on in H₂ tank number 1.

00 07 01 57 CC Roger, Bill.

00 07 02 03 CMP Houston, Apollo 8. We've just got finished taking two sets, six sightings on Sirius, and one set on Procyon.

00 07 02 17 CC Roger. I understand that's six on Sirius and one on Procyon.

00 07 02 23 CMP Two sets on Sirius, one set on Procyon.

00 07 02 25 CC Roger.

00 07 02 37 CDR And we're maneuvering now to PTC attitude.

00 07 02 46 CC Oh. Roger, Apollo 8.

00 07 03 26 CC Apollo 8, when you get a chance down in the lower equipment bay, it looks like you're using the floodlights in the dim 2 position, and that one is a time-limited item. We would like for you to do your standard running in the dim 1 position. Over.

00 07 03 44 CDR Roger. Just turned them off.

00 07 03 47 CC Okay. Anytime you have them on, running dim 1 position is preferred to the LEB.

00 07 03 52 CDR Thank you.

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00 07 04 39 LMP Houston. We have the cryo fan on - the number 1 H₂ tank was on at 07:01. You can give us a hack when you want it - when you're ready for it to be turned off.

00 07 04 50 CC Wilco.

00 07 04 57 CC Okay, Apollo 8. You can terminate that one and go to the other tank.

00 07 05 01 LMP Roger.

00 07 05 10 LMP Okay. O₂ gage number 2 is on.

00 07 05 14 CC Roger.

00 07 06 21 CMP Houston, Apollo 8.

00 07 06 22 CC Go ahead.

00 07 06 23 CMP Are you having any problem on the ground with your COMM?

00 07 06 27 CC Negative. You're coming in loud and clear.

00 07 06 30 CMP Okay. We seem to be breaking lock intermittently up here once in a while.

00 07 06 35 CC Roger. We'll keep our eye on it. It sounds good, though.

00 07 08 46 CMP Okay. Houston, Apollo 8. We've initiated the PTC.

00 07 08 51 CC Roger.

00 07 09 32 CC Okay. Apollo 8, you can terminate the fans in the hydrogen, and we're ready to start on the oxygen tanks.

00 07 09 41 CMP Okay. Stand by.

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00 07 11 59 CC Apollo 8, we are through with the dump; you can have the tape recorder back.

00 07 12 02 CMP Roger. Thank you.

00 07 15 10 CC Apollo 8, Houston. We are ready to go to the second O₂ tank.

00 07 15 15 CMP Okay.

00 07 15 19 CC And for your information, it's Cleveland 24 to 10, and what we plan to do --

00 07 15 27 CMP Say again.

00 07 15 30 CC That's Cleveland 24 to 10, not over yet.

00 06 15 42 CDR Thank you.

00 07 20 49 CC Okay, Apollo 8. Looks like you can terminate your cryo fans now, and we're going to leave you alone for a while and let you get caught up. Things we have onboard, the high-gain antenna check, COMM mode check that you have listed at 7 hours, we'll put off and do whenever you are ready for it. So that's at your convenience. During the high-gain dump that we performed using a wide band, we were still getting real good data at 36K, which is a little bit further than circuit margins that were predicted for you. And we've got our SPS burn coming up somewhere around 11 hours, and we'll give you more information on that later.

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00 07 21 31 LMP Roger. We're doing the PROGRAM 21 now, determining ground track for LOI that we did not make at 5 hours.

00 07 21 44 CC Roger. Thank you.

00 07 27 20 CDR Houston, Apollo 8.

00 07 27 21 CC Go ahead, Apollo 8.

00 07 27 22 CDR Okay. We just broke lock on S-band high-gain. We're on OMNI B now.

00 07 27 29 CC Roger. OMNI B.

00 07 27 36 CC Apollo 8, is that Bravo or Delta?

00 07 27 40 CDR Dog, Delta.

00 07 27 41 CC Roger.

00 07 27 43 CDR We can't get the PROGRAM 21 to integrate up to LOI; just stalled out around 69 hours and 2 minutes.

00 07 28 02 CC Roger. They are watching it.

00 07 28 35 CDR Houston, Apollo 8.

00 07 28 38 CC Go ahead, Apollo 8.

00 07 28 41 CDR Roger. Do you want us to stop the integration via VERB 96? Over.

00 07 28 54 CC That is affirmative; VERB 96.

00 07 28 57 CDR Roger. Will do.

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00 07 56 51 CDR Houston, this is Apollo 8.

00 07 56 54 CC Apollo 8, Houston.

00 07 56 55 CC Go ahead, Apollo 8.

00 07 56 58 CDR Roger. Do you want us to hold off on this P52 realignment, also?

00 07 57 04 SC Yes, that is affirmative, CAP COMM. We want to do that a couple of hours when it is related to the maneuver, midcourse.

00 07 58 10 CC That is affirmative, Apollo 8. Let's time the maneuver and we will hold off and do that all in normal premaneuver sequence. And - We have got a score here - in the fourth quarter, 31 to 13. And I've got some words on your P21 discrepancy any time you are interested. And I'd like to confirm - -

00 07 57 30 CDR Go ahead.

00 07 57 33 CC Okay. Before I get off on that one, I'd like to confirm that you use the VERB 37 procedure to go to P00.

00 07 57 41 CDR Roger.

00 07 57 43 CC Okay. On P21, the thinking runs that you had a slight error in your state vector at the time you started, and when that was integrated out, it intercepted the lunar surface where it locked up and this is contained in a fairly recent program note.

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00 07 58 06 CDR Okay. Now, we've closed the - the waste vent,
so we should see this O₂ come down now.

00 07 58 15 CC Okay. Understand you closed the waste vent,
and how about the lithium change? Have you done
that one?

00 07 58 23 CDR Roger. That's done.

00 07 58 24 CC Okay. Thank you.

00 07 58 30 F T-COMM, FLIGHT. Did you copy that?

00 07 58 33 CMP This conference communication is great. We
won't have to have any debriefing.

00 07 58 37 CC (Laughter) That's pretty outstanding.

00 07 58 38 CT Right.

00 07 58 43 CC Did you copy that?

00 08 13 39 CDR Houston, Apollo 8.

00 08 13 42 CC Go ahead, Apollo 8.

00 08 13 44 CDR Roger. With the delay in burn, do you mind if
we have a urine dump the - before the burn?
Will that foul your tracking up?

00 08 13 52 CC Okay. Stand by. Let me run that one by.

00 08 14 53 CC Apollo 8, Houston. We don't have any objections
to going ahead with the urine dump now. And for
your information, the waste water dump - our
schedule, we plan to put it off until about
11:30, and this will get you up to approximately
90 percent in your waste tank. It's a little
higher than normal, but we wanted to put this